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Log Event A

Borehole **50-02-12**

Borehole Information

Farm : T   **Tank :** T-102   **Site Number :** 299-W10-125

N-Coord : 43,693   **W-Coord :** 75,744   **TOC Elevation :** 672.14

Water Level, ft : 84.3   **Date Drilled :** 2/28/1974

Casing Record

Type : Steel-welded   Thickness, in. : 0.237   ID, in. : 4

Top Depth, ft. : 0   Bottom Depth, ft. : 92

Type : Steel-welded   Thickness, in. : 0.280   ID, in. : 6

Top Depth, ft. : 0   Bottom Depth, ft. : 92

Cement Bottom, ft. : 92   **Cement Top, ft. :** 0

Borehole Notes:

Borehole 50-02-12 was originally drilled in February 1974 and completed to a depth of 92 ft using 6-in.-diameter casing. In September 1980, the original 6-in. casing was perforated from 0 to 20 ft and 90 to 92 ft, a 4-in. casing was installed inside the 6-in. casing, and the annular space was filled with grout.

The zero reference for the SGLS was the top of the 4-in. casing, which is approximately even with the ground surface.

Equipment Information

Logging System : 2B   **Detector Type :** HPGe   **Detector Efficiency:** 35.0 %

Calibration Date : 10/1997   **Calibration Reference :** GJO-HAN-14   **Logging Procedure :** MAC-VZCP 1.7.10-1

Logging Information

Log Run Number : 1   **Log Run Date :** 06/17/1998   **Logging Engineer:** Alan Pearson

Start Depth, ft.: 0.0   **Counting Time, sec.:** 200   **L/R :** L   **Shield :** N

Finish Depth, ft. : 7.0   **MSA Interval, ft. :** 0.5   **Log Speed, ft/min.:** n/a

Log Run Number : 2   **Log Run Date :** 06/18/1998   **Logging Engineer:** Alan Pearson

Start Depth, ft.: 6.0   **Counting Time, sec.:** 200   **L/R :** L   **Shield :** N

Finish Depth, ft. : 66.0   **MSA Interval, ft. :** 0.5   **Log Speed, ft/min.:** n/a

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Log Event A

Borehole 50-02-12

Log Run Number : 3	**Log Run Date :** 06/19/1998	**Logging Engineer:** Alan Pearson	
Start Depth, ft.: 87.0	**Counting Time, sec.:** 200	**L/R :** L	**Shield :** N
Finish Depth, ft. : 65.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a	

Logging Operation Notes:

This borehole was logged by the SGLS in three log runs operating in the move-stop-acquire mode, stopping every 6-in. and collecting spectra data for 200 s. The total logging depth achieved was 87.0 ft. This borehole contained standing water below 84.3 ft during logging.

Analysis Information

Analyst :   R.R. Spatz

Data Processing Reference :   MAC-VZCP 1.7.9   Analysis Date : 08/27/1998

Analysis Notes :

The pre-survey and post-survey field verification for each logging run met the acceptance criteria established for peak shape and system efficiency. The energy calibration and peak-shape calibration from the calibration spectrum that most closely matched the field data were used to establish the peak resolution and channel-to-energy parameters used in processing the spectra acquired during the logging operation.

The casing correction factor for a 0.50-in.-thick steel casing was applied to the concentration data during the analysis process. This casing correction factor was applied because it most closely matched the 0.517-in. total combined thickness of the 4-in. and 6-in. casings. A grout correction was not made because none is available. A water correction was not applied because none is available for 4-in.-diameter boreholes. Use of this casing correction factor will cause radionuclide concentrations to be underestimated.

Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations. Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

Results/Interpretations:

The radionuclide concentrations identified in this section are reported as apparent concentrations only and are underestimated.

The only man-made radionuclide detected by the SGLS in this borehole was Cs-137. Cs-137 contamination

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Borehole   50-02-12

was isolated to a single point just above 1 pCi/g at the ground surface.

K-40 concentrations increase from a general background of 10 pCi/g at 36 ft to about 12 pCi/g between 36 and 47 ft. Between 49 ft and the bottom of the logged interval (87 ft), the K-40 concentrations gradually increase from about 8 to 12 pCi/g. Below 79 ft, the KUT concentrations increase.